

**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

EL

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>A61L 27/54, 31/16, D06M 16/00</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 00/32247</b> <b>(43) International Publication Date:</b> 8 June 2000 (08.06.00)
<b>(21) International Application Number:</b> PCT/US99/27190 <b>(22) International Filing Date:</b> 16 November 1999 (16.11.99) <b>(30) Priority Data:</b> 09/197,809 23 November 1998 (23.11.98) US <b>(71) Applicant:</b> HEALTHSHIELD TECHNOLOGIES LLC [US/US]; Suite 201, 67 Prospect Avenue, West Hartford, CT 06106 (US). <b>(72) Inventors:</b> TROGOLO, Jeffrey, A.; 228 Commonwealth Av- enue, Boston, MA 02116 (US). BARRY, John, E.; 18 Drake Lane, Derry, NH 03038 (US). HOLLEY, Steven; 24 Bigelow Street, Brighton, MA 02135 (US). <b>(74) Agents:</b> GOGORIS, Adda, C. et al.; Darby & Darby P.C., 805 Third Avenue, New York, NY 10022-7513 (US).	<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>  <b>(88) Date of publication of the international search report:</b> 5 October 2000 (05.10.00)	
<b>(54) Title:</b> ANTIMICROBIAL FABRIC AND MEDICAL GRAFT OF THE FABRIC  <b>(57) Abstract</b>  A medical graft, such as a vascular graft, made of a fabric containing an inorganic antimicrobial agent. The fabric has a coating material with the inorganic antimicrobial agent bonded to it, the agent preferably being a zeolite. The fabric can be porous so as to permit tissue to grow on it with the fabric pores providing attachment sites for the tissue. Alternatively, the fabric can be coated with a tissue biocompatible material, such as collagen. A porous fabric applicable for the graft, and for other medical uses, and a method of manufacturing the porous fabric having a coating thereon to which is bonded an antimicrobial agent, such as a zeolite, also is provided. The fabric is antimicrobial, remains pliable, and is also porous.		

*FOR THE PURPOSES OF INFORMATION ONLY*

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/27190

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61L27/54 A61L31/16 D06M16/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61L D06M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 525 410 A (HAGIWARA ZENJI ET AL) 25 June 1985 (1985-06-25) column 1, line 56 -column 2, line 5 column 3, line 33 - line 40 column 5, line 38 - line 66 examples ---	23-32
A	US 5 003 638 A (MIYAKE TERUYOSHI ET AL) 2 April 1991 (1991-04-02) column 1, line 24 - line 25 column 5, line 44 -column 6, line 8 ---	1-32
A	US 4 906 466 A (EDWARDS NEIL ET AL) 6 March 1990 (1990-03-06) column 2, line 38 - line 46 column 4, line 64 -column 5, line 4 --- -/-	1-22

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

26 June 2000

Date of mailing of the international search report

10/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Cousins-Van Steen, G

# INTERNATIONAL SEARCH REPORT

Int. J. Application No

PCT/US 99/27190

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 116 865 A (KANEBO LTD ;KANTO KAGAKU (JP)) 29 August 1984 (1984-08-29) &amp; US 4 775 585 A 4 October 1988 (1988-10-04) cited in the application</p>	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/27190

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4525410 A	25-06-1985	JP 1390178 C	23-07-1987
		JP 59037956 A	01-03-1984
		JP 61022977 B	03-06-1986
		CA 1225584 A	18-08-1987
		DE 3378673 D	19-01-1989
		EP 0103214 A	21-03-1984
US 5003638 A	02-04-1991	JP 3199403 A	30-08-1991
		KR 9201924 B	07-03-1992
US 4906466 A	06-03-1990	AT 87794 T	15-04-1993
		AU 599995 B	02-08-1990
		AU 7505487 A	07-01-1988
		DE 3785253 D	13-05-1993
		DE 3785253 T	12-08-1993
		EP 0251783 A	07-01-1988
		ES 2054673 T	16-08-1994
		FI 872964 A, B,	04-01-1988
		JP 8005767 B	24-01-1996
		JP 63088109 A	19-04-1988
		NO 174732 B	21-03-1994
		NZ 220918 A	28-11-1989
		US 5413788 A	09-05-1995
EP 0116865 A	29-08-1984	JP 1729959 C	29-01-1993
		JP 59133235 A	31-07-1984
		JP 63054013 B	26-10-1988
		AU 549375 B	23-01-1986
		CA 1253992 A	09-05-1989
		DE 3461240 D	02-01-1987
		US 4775585 A	04-10-1988
		US 4911899 A	27-03-1990
		US 4911898 A	27-03-1990